

46. ORTYGOMETRA CINEREA (172).

[Dinagat, ♀, June : iris crimson.]

47. HYPOTÆNIDIA TORQUATA (177).

[Dinagat, ♀, June.]

48. BUTORIDES JAVANICA (197).

[*a.* Dinagat, ♀ ; *b.* Nipah, ♂ ♀, July : iris bright yellow ; legs bright chrome-yellow.]

No date on label of Dinagat example, but killed in June.

49. DYSPORUS SULA (214).

[Dinagat, ♂, June : iris white ; feet light leaden-green ; bill whitish green.]

In full white and rich brown plumage. Wing 15·30, tail 10·00, culmen 3·90, tarsus 1·60.

11. On a new Philippine Genus and Species of Bird. By ARTHUR, Marquis of TWEEDDALE, F.R.S., President of the Society.

[Received December 12, 1877.]

(Plate IX.)

Until Dr. Steere some three years ago discovered in the island of Basilan two species¹ belonging to the *Timeliidæ*, this natural family, so characteristic of the Indian region, was supposed to be unrepresented in the Philippines. Since then Mr. Everett has discovered a third species² in the island of Dinagat, and a fourth, the subject of this note, in the island of Negros. This last bird is so anomalous in its structure that I propose to constitute it the type of a new genus,

DASYCROTAPHA³.

Base of maxilla densely clothed with short feathers, space behind the eye naked. Bill about the length of head, and formed as in *Mixornis*. Wing lengthened, longer than tail, first primary half the length of the second, which is a fifth shorter than the third, third a little shorter than the fourth, which is equal to fifth and sixth. Tail moderate and square. Tarsus strong ; hallux with claw stout and long ; digits short, slender ; outer a little shorter than inner.

DASYCROTAPHA SPECIOSA, sp. nov. (Plate IX.).

Head crested ; forehead with dense short plumes covering the base of the maxilla ; circle round the eye, whole space before the eye, tuft on the side of the base of mandible, chin and uppermost

¹ *Macronus striaticeps*, Sharpe, and *Dendrobiastes basilanica*, Sharpe.² *Mixornis capitalis*, Tweeddale.³ *δαρύς*, *villosus*, et *κρόταφοι*, *tempora capitis*.



J. Smit lth.

Hanhart imp.

DASYCROTAPHA SPECIOSA.

part of throat pure lemon-yellow; crown of the head black; postoccipital plumes yellow; nape yellowish green tipped with black; a lengthened tuft of plumes springing from above the eye bright orange; a line immediately below this tuft black; a tuft of stiff decomposed feathers springing from below the eye and extending over the ears white or greyish white; an irregular band across the throat black; dorsal feathers grey with light olive-green tips and white shafts; uropygium yellowish green; upper tail-coverts the same, tinged with rufous; lower throat and upper breast bright yellow, most of the feathers with black terminal drops; lower breast and rest of under plumage duller yellow tinged with green on the flanks; quills brown margined with yellowish olive-green, inner margin of quills pale yellow; wing-coverts dull olive-green, carpal edge and wing-lining yellow; tail dull rufous.

Wing 2·62, tail 2·37, tarsus 0·87, culmen 0·75.

Hab. Valencia, Island of Negros, ♂, August. Iris crimson; bill orange-yellow. (*Everett.*)

The hereditary affinity of this new form with *Macronus striaticeps* and *Mixornis capitalis* is betrayed by the colouring and markings of the dorsal plumage.

February 5, 1878.

Prof. St. George Mivart., F.R.S., V.P., in the Chair.

The Secretary read the following report on the additions to the Society's Menagerie during the month of January 1878.

The total number of registered additions to the Society's Menagerie during the month of January was 91, of which 43 were by presentation, 1 by birth, 41 by purchase, and 6 were received on deposit. The total number of departures during the same period, by death and removals, was 78.

The most remarkable additions during the month of January were as follows:—

1. A Japanese Wild Dog, presented by Harry Pryer, Esq., of Yokohama, January 1st—an animal apparently allied to the "Dhole" of India and the "Dingo" of Australia. Mr. E. W. Janson has kindly favoured me with the following extracts from two letters which he has received from Mr. Pryer on this subject.

"Yokohama, Oct. 8th, 1877.

"I have sent by the 'Loudoun Castle,' viâ New York, a fine specimen of the Japanese Wild Dog. This is an animal quite new, and is neither a Wolf nor an ordinary Dog. Its principal distinguishing features are its long narrow feet and its head; it most resembles the dog used by the hunters here, one of which is figured in Siebold. Its habits are totally different from those of any domesticated Dog. When pleased it has a most extraordinary way of laughing, and also, when pleased or very angry, has a curious dancing gait. This specimen

was taken a puppy on the slopes of Fujisan last year. I bought him for \$11 in November last. He has learnt a sort of bark from the other dogs which he did not know when I first had him; he comes out sometimes with a regular wolf's howl, but not often. In his muzzle he resembles more the mainland Wolf, the northern Wolf being, like the Siberian one, very long in the nose, and those on the mainland (*C. hodophylax*) much shorter. My first impression was that this dog was a cross between a wolf and the hunter's dog; but both its parents then would have had very large round feet, which this has not. A friend told me that it is very like the Indian Dhole. In winter it has a thick coat; but in summer all the long thin hair comes out, and it then has only its coarse wiry hair on. It is a much scarcer animal than the Wolf on the mainland, which latter is rather common in the mountains, anywhere where the sheep-faced Antelope is found."

"Yokohama, Nov. 17th, 1877.

"I am trying to get a Southern Wolf (*Canis hodophylax*) to send as a present to the Society. I have sent the Wild Dog in the 'Loudoun Castle,' and should like to hear what they say about him. He is a complete puzzle to me. At one time I would look at him and think that he was only an abnormal form of the common Dog, run wild, and at other times feel as perfectly convinced that he had nothing in common with it. He has very narrow feet, clean limbs, very long canines, coarse hair in summer and plenty of long thin hair in the winter, eyes and ears like a Wolf. I heard of the animal wherever I went from the hunters, but only succeeded in getting this one, as they say it is very difficult to catch, more so than the Wolf, the capture of which is no easy task, as I know, as I have been in places where they were plentiful, but only saw one and poisoned another, although I have heard half a dozen at a time howling quite close to me in the forests of Yamato.

"My Wild Dog differs considerably from *C. lupus*, which is found in Yesso, and *C. hodophylax*, which is confined to the Main Island, although in his shorter muzzle he resembles the latter. When we know more about the cave and other recent bone-deposits of Japan, we shall be able to speak more definitely about him."

2. A young Penguin of the genus *Spheniscus*, purchased January 24th. This bird is said to have been obtained in Chili, and is probably the young of *Spheniscus humboldti*. It is very tame, and has been for the present placed in a compartment of the Fish-house, where it seems likely to do well.

Prof. St. George Mivart, F.R.S., read a Memoir entitled, "Notes on the Fins of Elasmobranchs, with Considerations on the Nature and Homologies of Vertebrate Limbs," of which the following is an abstract:—

In this paper I describe (from dissections made for the purpose) the skeleton of the paired and azygos fins, especially the dorsal fins, of *Zygæna malleus*, *Mustelus antarcticus*, *Notidanus cinereus*, *Scyl-*

lium canicula, *Ginglymostoma cirratum*, *Chiloscyllium ocellatum*, *Acanthias blainvillei*, *Spinax niger*, *Pristiophorus japonicus*, *Pristis cuspidatus*, *Rhynchobates djeddensis*, *Trygonorhina fasciata*, and *Callorhynchus antarcticus*; and I add notes made from preparations of *Lamna cornubica*, *Cestracion phillippi*, *Squatina angelus*, *Polyodon foliosus*, and *Polypterus bichir*.

Besides wishing to ascertain the positive conditions of skeletal structures in these forms, the examinations were partly undertaken with a view to the questions:—

(1) What is the nature of Vertebrate limbs generally?

(2) What is the relation of Piscine to other limbs?

To these questions four others are subordinate:—

A. Are the paired-limb structures of a nature distinct from that of azygos fins?

B. Are paired limbs essentially axial structures which have become more or less detached from skeletal axis, or peripheral structures which have become secondarily more or less connected with it?

C. What is the nature of limb-girdles?

D. What is the line of genesis of the cheiropterygium.

I then note and discuss the opinions on these matters of Oken, Carus, Cuvier, Owen, MacIise, Goodsir, Humphrey, Gegenbaur, Macalister, Huxley, Balfour, and Parker.

I have myself arrived at the conclusion that the nature of the paired and azygos limbs is fundamentally the same. I have, in fact, been brought to this conviction by finding various degrees of coalescence between the cartilaginous rays supporting the dorsal fins, and various degrees of connexion or continuity between such fin-supports and the subjacent axial skeleton. I have noted coalescence amongst the rays in *Scyllium canicula*, *Ginglymostoma cirratum*, and especially in *Notidanus cinereus*, where it is carried to such an extent that the rays are supported by one continuous basal cartilage. Continuity with the axial skeleton is described as existing in the dorsal fin-cartilages in several forms, but especially in *Pristis* and *Pristiophorus*; and I would suggest that the lateral pressure of its saw-like rostrum must be more or less aided by very firm fixation to the vertebral column of the cartilages supporting the dorsal fin.

I have found much resemblance between the skeleton of the ventral and the dorsal fins, as, for example, in *Notidanus*, in *Chiloscyllium* and *Raia*; also between the anal and ventral fins, as again in *Notidanus*. But the ventral fin of *Polyodon* is the most striking, presenting as it does a longitudinal double series of simple parallel rays, quite like the simplest form of the skeleton of the dorsal fins. Now, as the ventral and pectoral fins are admitted on all hands to be of the same nature, if the ventrals are of the same nature with the azygos fins, the pectoral ones must be also of that same nature.

As to the objection which may be drawn from the attachment of the pectoral fins to the axial skeleton by a shoulder-girdle instead of by a direct continuous longitudinal adhesion, as in some dorsal fins, I observe:—(1) The pectoral-fin support could not continuously adhere to the axial skeleton longitudinally without impeding the flexure of

the body in swimming; (2) the pectoral fins join the body at too low a level to abut directly on the vertebral column; (3) such direct connexion is prevented by the existence of the body-cavity.

I believe that the limb-girdles are lateral ingrowths from the paired-fin skeleton (an idea already suggested by Mr. J. K. Thacher of New Haven); and I believe such skeleton is the modified remnant of a longitudinal series of similar rays formed primitively in a continuous longitudinal lateral fold.

Similarly, I believe that the skeleton of the azygos fins is a structure also formed primitively in a continuous median fold, and that the dorsal rays are not outgrowths from the vertebral column. If, however, neural spines are homologous with the cartilaginous rays of dorsal fins, then it seems to follow that the spinous processes of higher animals and of man are essentially exoskeletal parts which have adhered to, and grown to be connate with the axial skeleton.

As to the caudal fin, I note a constant difference both as to the number and form of the skeletal parts of its dorsal and ventral portions, seeming to point to some genetic difference needing investigation.

I then proceed to the question of the homologies of piscine and digit-bearing limbs, adopting the view that the preaxial margin of the pectoral fin is that turned obliquely dorsal,—a matter which seems established by its innervation, apart from other proof.

I oppose the view which adopts the *Ceratodus* type of limb as the representative of the archipterygium (Elasmobranch ventrals certainly lend no vestige of support to the theory), and then consider and criticise the successive modifications of opinion expressed by Gegenbaur and Huxley.

I regard some Rays as having pectorals hypertrophied indeed, yet most like the true archipterygium (*i. e.* the least-modified by coalescence) of all Elasmobranch pectorals. As to Teleosteans, not only do I think with Günther that the arrangement of the limb-skeleton of *Ceratodus* is foreshadowed in the pectoral fin of *Acipenser*, but I think it probable that the Teleostean form of limb as seen in *Anguilla* and *Blennius* affords us indications of a very primitive type, whence the pectorals of Teleosteans on the one hand and of Elasmobranchs on the other may both have been derived.

I cannot think that the metapterygium has developed into the limb-axis of the digit-bearing limb; I believe such axis to be rather derived from the mesopterygium, or (as this is sometimes absent, as in *Chiloscyllium*, or imperfect as in *Polypterus*) from the propterygium.

The conclusions I have arrived at as to the probable genesis of Vertebrate limbs are as follows:—

(1) Two continuous lateral longitudinal folds were developed similar to dorsal and ventral median longitudinal folds.

(2) Separate, narrow, solid supports in longitudinal series, and with their long axes directed more or less outwards at right angles with the long axis of the body, were developed in varying extents in all these four longitudinal folds.

(3) The longitudinal folds became interrupted variously, the

lateral fold so as to form two prominences on each side, *i. e.* the primitive paired limbs.

(4) Each anterior limb increased in size more rapidly than the posterior limb.

(5) The bases of the cartilaginous supports coalesced as was needed according to the respective practical needs of the different separate portions of the longitudinal folds, *i. e.* the respective needs of the several fins.

(6) Occasionally the dorsal radials coalesced (as in *Notidanus* &c.) and sought centripetally (as in *Pristis* &c.) adhesion to the skeletal axis.

(7) The rays of the hinder paired limbs did so more constantly, and ultimately prolonged themselves inwards by mesiad growths from their coalesced bases, till the piscine pelvic structure arose as we see it in *Squatina*¹

(8) The pectoral rays with increasing development also coalesced proximally, and, thence prolonging themselves inwards to seek a *point d'appui*, shot dorsad and ventrad to obtain a firm support and at the same time to avoid the visceral cavity. Thus they came to abut dorsally against the axial skeleton and to meet ventrally together in the middle line below.

(9) The lateral fins, as they were applied to support the body on the ground, became elongated, segmented and narrowed, so that probably the line of the propterygium, or possibly that of the mesopterygium, became the axis of the digit-bearing limb.

(10) The distal end of the incipient cheiropterygium either preserved and enlarged preexisting cartilages or developed fresh ones to serve fresh needs, and so grew into the developed cheiropterygium; but there is not as yet enough evidence to determine what was the precise course of this transformation.

(11) The pelvic limb acquired a solid connexion with the axial skeleton, a pelvic girdle, through its need of a *point d'appui* as a locomotive organ on land.

(12) The pelvic limb became also elongated; and in those cases where its function was quite similar to that of the pectoral limb its structure became also quite similar (*e. g.* *Ichthyosaurus*, *Plesiosaurus*, *Chelydra*, &c.); but for the quadrupedal mode of progression it became segmented and inflected in a way generally parallel with, but (from its mode of use) in most cases in part inversely to, the inflections of the pectoral limbs.

The amount of apparently spontaneous change needed to effect these transformations may appear excessive; but I believe that the excessive plasticity of the animal organism is generally too little appreciated—a plasticity which results in and is evidenced by the many instances we now know of the independent origin of similar structures. The plasticity of animals might be expected to be great; for plasticity is bodily reaction in response to external stimuli. The response which is most rapid and complete is sensation; and an animal is a creature

¹ This view has been put forward by Mr. J. K. Thacher of New Haven, Connecticut. See Connecticut Trans. vol. iii.

the essence of which is "impressibility," and may be described as a more or less complex arrangement for carrying about, nourishing, and propagating a plexus of sensations.

The two initial questions may then, in conclusion, be answered as follows :—

(1) Vertebrate limbs are differentiations of continuous lateral folds. They are therefore not limited to four, and are for locomotive convenience. There might apparently be several successive paired limbs on each side, just as there are often several successive dorsal fins paired ; and azygos fins and limbs being of the same nature, each separate part may be called a pterygium, and for the sum total of the whole the term *sympterygium* may be employed.

(2) Piscine limbs are related to digit-bearing limbs as structures which have diverged less from the primitive condition, a natural consequence of fishes making use of their fins in that medium in which the primitive continuous lateral folds were first developed.

This paper will be published entire in the Society's Transactions.

The following papers were read :—

1. Reports on the Collections of Birds made during the Voyage of H.M.S. 'Challenger.'—No. VII. On the Birds of Cape York and the neighbouring Islands (Raine, Wednesday, and Booby Islands). By W. A. FORBES, F.Z.S.

[Received December 18, 1877.]

The collection of Birds made by H.M.S. 'Challenger' at Cape York and in its neighbourhood, of which the following is an account, comprises 61 skins, referable to 37 species. As might have been expected, all, or nearly all, belong to well known Australian forms, one or two only being left uncertain for want of more materials and on account of the immature condition of the specimens. Most of the skins are in excellent condition ; and their value is much increased by the notes in Mr. Murray's journal as to the colour of the soft parts &c. Besides Cape York, Raine Island (at the end of the Barrier Reef), Wednesday Island (in Torres Straits), and Booby Island (also in Torres Straits) were visited, and collections made. I copy the following extracts from Mr. Murray's journal as regards the localities where birds were obtained :—

"Raine Island, Barrier Reef, Australia. Ship landed two boats for nearly three hours. The following birds were taken" (several sea-birds, *Rallus pectoralis*, and *Strepsilas interpres*).

"Cape York, Somerset. Ship arrived on evening of 1st Sept., 1874 ; left Cape York on Sept. 8th." (44 skins were obtained here).

"Wednesday Island, Torres Straits. Parties landed the same day (Sept. 8). Most of the birds seen were the same as those shot